



NORTH CAROLINA

Department of Transportation



R-2577 U.S. 158 (Reidsville Road) Improvements Forsyth and Guilford Counties

Merger Concurrence Points 3 and 4A

May 16, 2018

AGENDA

1. Meeting Purpose
2. Project Description
3. Purpose of and Need for the Project
4. Project History and Status
5. Project Cost
6. CP 3: Least Environmentally Damaging Practicable Alternative
7. CP 4A: Avoidance and Minimization

Meeting Purpose

- Present relevant project information
- Discuss potential impacts
- Reach Concurrence on Least Environmentally Damaging Practicable Alternative (LEDPA)
- Reach Concurrence on Avoidance and Minimization Measures

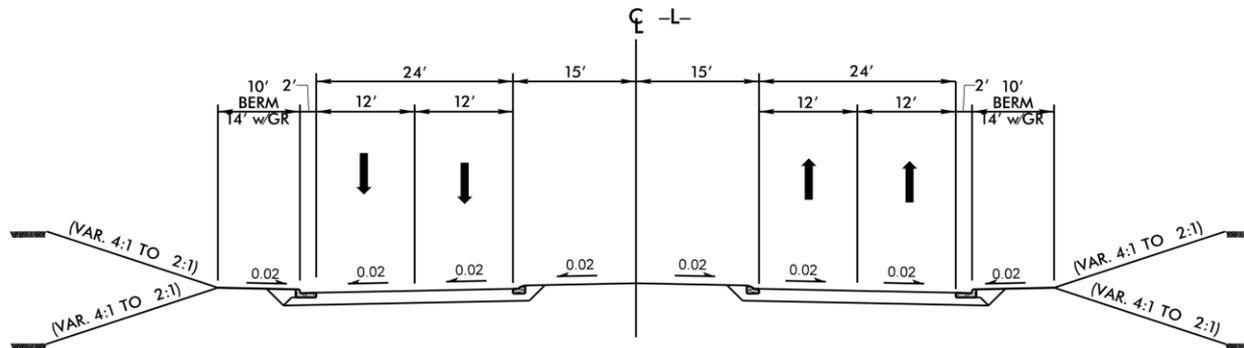
Project Description

- Proposed widening of U.S. 158 (Reidsville Road) to a multi-lane facility with a proposed bypass around Stokesdale.
- Project starts north of U.S. 421/I-40 Business in Forsyth County and ends at U.S. 220 (Future I-73) in Guilford County.
- Total length = 18.8 miles, project will be constructed in 3 parts, A, B, and C.
- Improvements consist of a four-lane median divided section of varying widths.

Vicinity Map



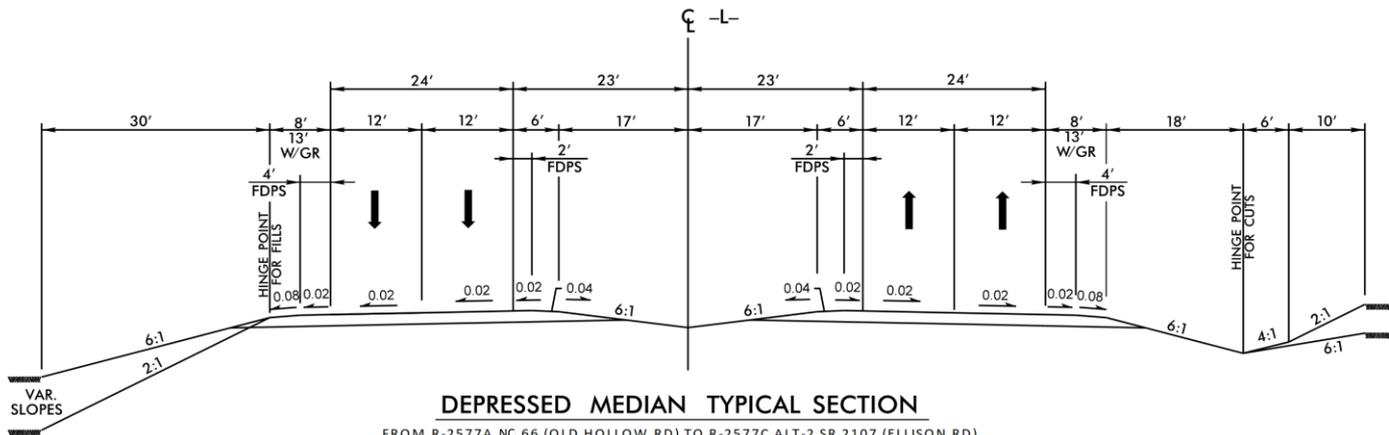
Proposed Typical Section



RAISED MEDIAN WITH CURB & GUTTER TYPICAL SECTION

FROM R-2577A SR 2357 (OLD GREENSBOO RD) TO R-2577A NC 66 (OLD HOLLOW RD)

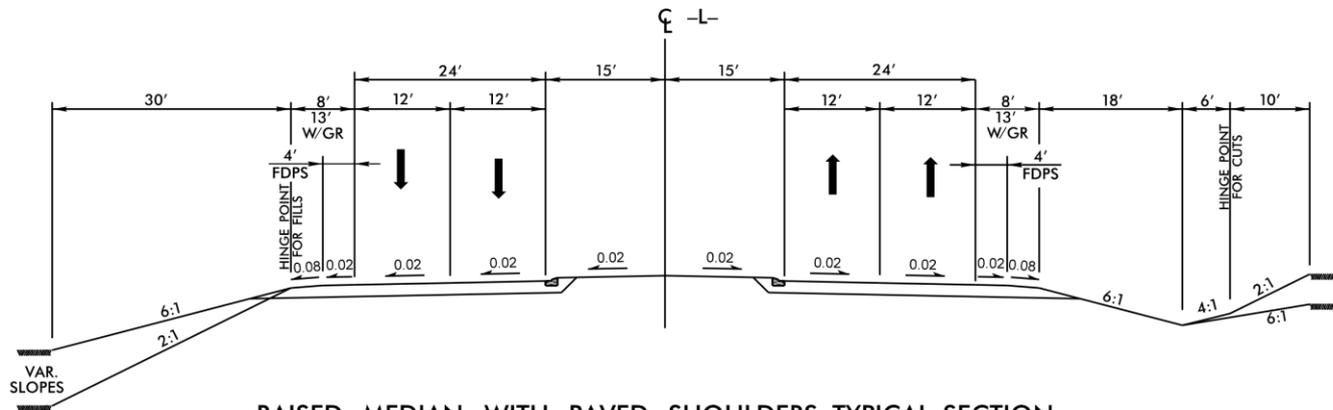
Proposed Typical Section



DEPRESSED MEDIAN TYPICAL SECTION

FROM R-2577A NC 66 (OLD HOLLOW RD) TO R-2577C ALT-2 SR 2107 (ELLISON RD)
 FROM R-2577A NC 66 (OLD HOLLOW RD) TO R-2577C ALT-3 SR 2034 (ANTHONY RD)
 FROM R-2577C ALT-3 BRANSON RD TO R-2577C ALT-3SR 2101 (ATHENS RD)

Proposed Typical Section



RAISED MEDIAN WITH PAVED SHOULDERS TYPICAL SECTION

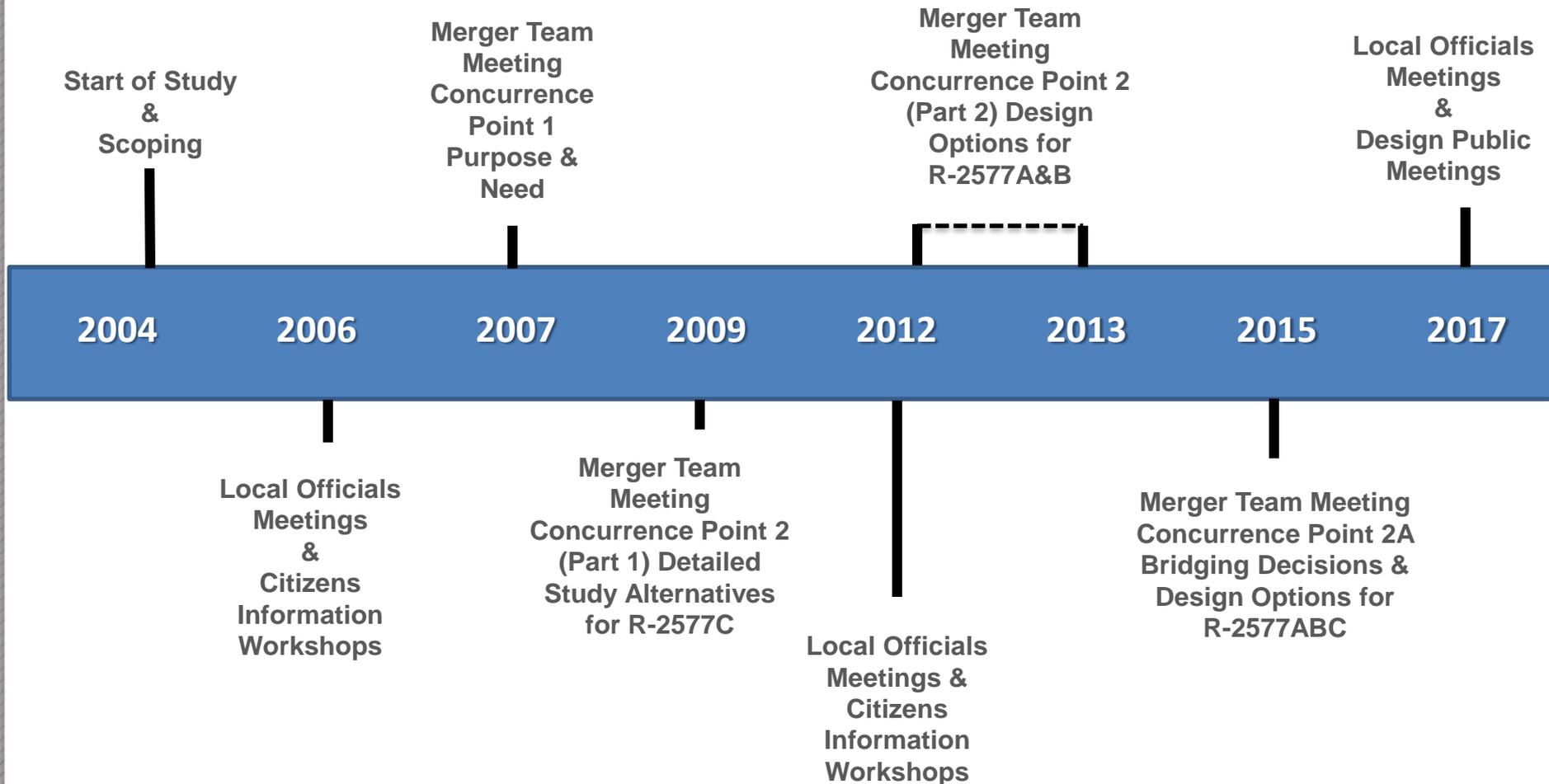
FROM R-2577C ALT-2 SR 2107 (ELLISON RD) TO R-2577C ALT-2 I-73 (US 220)
 FROM R-2577C ALT-3 SR 2034 (ANTHONY RD) TO R-2577C ALT-3 BRANSON RD
 FROM R-2577C ALT-3 SR 2101 (ATHENS RD) TO R-2577C ALT-3 I-73 (US 220)

Purpose and Need

- Purpose of project is to improve the traffic carrying capacity and level of service along U.S. 158 in Forsyth and Guilford Counties.
- Project need stems from existing transportation deficiencies along U.S. 158, that will cause travel delays, increase in potential accidents, and contribute to the inefficient operation of motor vehicles.



Project History and Status

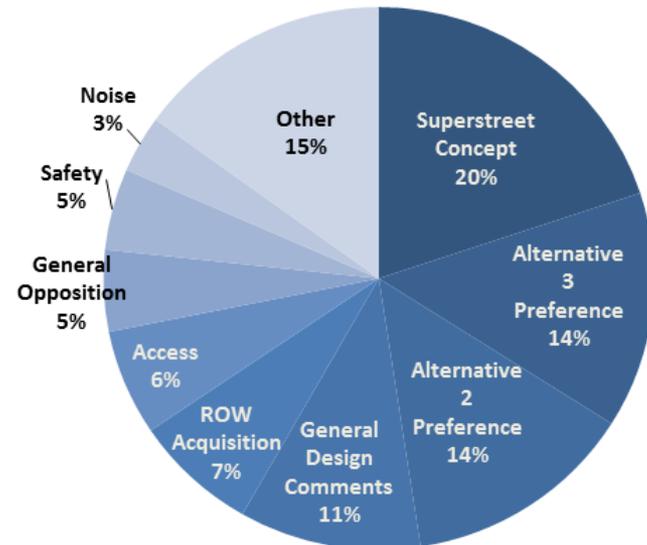


Merger Team Meetings

Project Section	Concurrence Point	Date	Concurrence Reached (Yes/No)
R-2577A, B, & C	1	August 14, 2007	Yes
R-2577C	2	February 17, 2009	Yes
R-2577A&B	2	December 12, 2012 August 22, 2013	No Yes
R-2577A, B, & C	2A	September 29, 2015	Yes

Public Meetings

- Citizens Informational Workshops (CIWs) were held in April 2006 and April 2012
- Design Public Meetings (DPMs) held in October 2017
 - 700 attendees
 - 168 written comments



Project Schedule

Project Section	Right of Way	Construction
R-2577A	2020	2022
R-2577B	2024	2026
R-2577C	unfunded	unfunded
Note: Schedule is based on 2018-2027 State Transportation Improvement Program (STIP)		

Combined State EA/FONSI – August 2018

Project Cost

R-2577	Right of Way * (Millions)	Utilities (Millions)	Construction (Millions)	Total Project Cost (Millions)
Part A:				
Segment 3 Southern Widening Option	\$27.2	\$0.53	\$40.0	\$66.93
Segment 3 Transitional Widening Option	\$27.0	\$0.53	\$39.0	\$66.13
Part B:				
Segment 3 Southern Widening Option	\$24.2	\$0.72	\$49.0	\$73.72
Segment 3 Transitional Widening Option	\$26.3	\$0.33	\$49.0	\$75.33
Part C:				
Alternative 2 Southern Bypass	\$42.0	\$0.76	\$49.8	\$92.56
Alternative 3 Northern Bypass	\$61.1	\$0.73	\$48.4	\$110.23
Note: *Right of way cost is preliminary and will be updated in the final document				

CP 3 LEDPA – Impact Summary

R-2577ABC Project Impacts	Segment 3 R-2577A&B Southern Widening	Segment 3 R-2577A&B Transitional Widening	Bypass Alt 2 R-2577C South of Stokesdale	Bypass Alt 3 R-2577C North of Stokesdale
Streams (No. of Crossings / LF)*	3 / 460	4 / 636	13 / 3335	12 / 2842
Wetlands (Ac)*	0.0	0.0	1.5	0.6
Ponds / Lake (Ac)*	0.2	0.5	0.6	0.0
Stream Buffers (Yes/No)	No	No	Yes - Jordan Lake	Yes - Jordan Lake
Zone 1 Stream Buffers*	0	0	1.9	4.1
Zone 2 Stream Buffers*	0	0	1.4	3.0
River Basins	Yadkin / Roanoke	Yadkin / Roanoke	Roanoke / Cape Fear	Roanoke / Cape Fear
Floodplain Areas	-	-	1 - Kings Creek	-
100-year Floodplain & Floodway (Ac)*	0.0	0.0	0.3	0.0
Forested Area (Ac)*	9.3	12.7	75.0	65.3
Federally Listed Species	NLEB & SAB	NLEB & SAB	NLEB & SWP	NLEB & SWP
VAD (No. of Impacts/Ac)**	1 / 1.5	1 / 0.9	0 / 0.0	0 / 0.0
UST Sites***	0	0	1	4
Historic Architectural Properties	0	0	0	0
Archaeological Properties	0	0	0	0
Inactive Hazardous Sites***	0	0	1	1
No. of Residential Relocations^	19	14	16	39
No. of Business Relocations^	1	2	6	7
No. of Church/Other Relocations^	1	0	5	11
Proposed Interchanges	0	0	0	1
Rest (Retirement) Homes	0	0	0	1
Cemeteries	0	0	2	3
Major Utilities	0	0	0	0
Right of Way Cost (\$M)^	51.4	53.3	42.0	61.1
Utility Cost (\$M)	1.25	0.86	0.76	0.73
Construction Cost (\$<)	88.0	87.3	49.8	48.4
Wetland & Stream Mitigation Cost (\$M)^^	1.78	1.82	2.52	2.28
Total Cost (\$M)	142.43	143.28	95.08	112.51

Note: * Impacts calculated using slopestakes + 25 feet; ** Impacts calc. using ROW+Easement width

VAD – Voluntary Agricultural District; NLEB – Northern long-eared bat; SAB – Small-anthered bittercress; SWP – Small-whorled pogonia

^Numbers and costs are preliminary and will be updated prior to completion of document

^^Cost based on assuming 2:1 mitigation ratio; All costs shown for segment 3 widening options (southern and transitional) in R-2577A&B reflect the total costs for sections A and B combined.

NCDOT Recommended Alternatives

CP 3 LEDPA – Impact Summary

- R-2577A&B Segment 3 Widening
 - Transitional widening option impacts 1 more stream and has 176 LF of additional stream impacts than Southern widening option.

Impact	Southern Widening	Transitional Widening
Wetlands (Ac.)	0	0
Streams (No. / LF)	3 / 460	4 / 636
Ponds (Ac.)	0.2	0.5

CP 3 LEDPA – Impact Summary

- R-2577A&B Segment 3 Widening
 - Transitional widening has fewer relocations than Southern widening option (19 vs. 14).

Impact	Southern Widening	Transitional Widening
Residential relocations	19	14
Business relocations	1	2
Church/Other relocations	1	0

Note: Number of Relocations are preliminary and will be updated in final document

CP 3 LEDPA – Impact Summary

- R-2577A&B Segment 3 Widening
 - Transitional widening option costs ~\$0.85M more than Southern widening option.

Cost	Southern Widening	Transitional Widening
Right of way (\$ Millions)*	51.4	53.3
Utility (\$ Millions)	1.25	0.86
Construction (\$ Millions)	88.0	87.3
Wetland and Stream Mitigation (\$ Millions)	1.78	1.82
Total (\$ Millions)	142.43	143.28

*Note: Right of way costs are preliminary and will be updated in final document

CP 3 LEDPA – Impact Summary

- R-2577C New Location Alternatives
 - Alternative 3 (Northern Bypass) impacts 0.9 Ac. less wetlands and 505 LF less stream length than Alternative 2 (Southern Bypass).

Impact	Alternative 2 (Southern Bypass)	Alternative 3 (Northern Bypass)
Wetlands (Ac.)	1.5	0.6
Streams (LF)	3,326	2,821
Ponds (Ac.)	0.6	0.0

CP 3 LEDPA – Impact Summary

- R-2577C New Location Alternatives
 - Alternative 3 (Northern Bypass) has fewer residential and business relocations than Alternative 2 (Southern Bypass).

Impact	Alternative 2 (Southern Bypass)	Alternative 3 (Northern Bypass)
Residential relocations	16	39
Business relocations	6	7
Church/Other relocations	1	2

Note: No. of Relocations are preliminary and will be updated in final document

CP 3 LEDPA – Impact Summary

- R-2577C New Location Alternatives
 - Alternative 3 (Northern Bypass) costs ~ \$17 M more than Alternative 2 (Southern Bypass).

Cost	Alternative 2 Southern Bypass	Alternative 3 Northern Bypass
Right of way (\$ Millions)*	42.0	61.1
Utility (\$ Millions)	0.76	0.73
Construction (\$ Millions)	49.8	48.4
Wetland and Stream Mitigation (\$ Millions)	2.52	2.28
Total (\$ Millions)	95.08	112.51

*Note: Right of way costs are preliminary and will be updated in final document

CP 3 LEDPA – Impact Summary



Culp Home Furnishings \$10 Expansion, retention pond, and septic field for 450 employees



CP 3 LEDPA – Concurrence Form

TIP Project: R-2577

WBS No.: 37405

Least Environmentally Damaging Practicable Alternative (LEDPA): Based upon the current project development information, the Project Team has concurred that the following checked alternatives are the Least Environmentally Damaging Practicable Alternative (LEDPA):

R-2577, Section A&B

Segment 1 – Northern widening (concurred on 9/29/2015)

Segment 2 – Transitional widening (concurred on 9/29/2015)

Segment 3

Transitional widening

Southern widening

Segment 4 – Transitional widening (concurrence on 8/22/2013)

Segment 5 – Transitional widening (concurrence on 8/22/2013)

Segment 6 – Transitional widening (concurrence on 8/22/2013)

Segment 7 – Northern widening (concurrence on 8/22/2013)

Comments

R-2577, Section C

Alternative 2 (South of Stokesdale)

Alternative 3 (North of Stokesdale)

Comments

The Project Team has concurred on this date of May 16, 2018, on the above mentioned alternatives as the Least Environmentally Damaging Practicable Alternative (LEDPA) for TIP Project R-2577A, B, and C.

CP 4A Avoidance & Minimization Proposed Bridge Lengths

Location	Existing Structure	Proposed Structure Concluded to at CP 2A	Proposed Structure Length
Lowery Mill Creek Sta. 140+50	3-Barrel, 7'X10' bottomless culvert	Dual bridges	Total bridge length = 85'
Belews Creek Sta. 494+00	6-Barrel, 9'x7' culvert	Dual bridges	Total bridge length = 110'
Belews Lake Sta. 607+00	Bridge 164 - 3 span bridge: 1@31', 1@32'- 6", 1@31' Total bridge length = 94'-6"	Retain & widen Bridge 164 or build New adjacent bridge	Coordination with Duke Energy for conveyance permit has led to NCDOT recommending existing bridge to be replaced with dual bridges at equal or greater length. New bridges will be 4' higher than existing bridge. Total bridge length = 100'

CP 4A Avoidance & Minimization

Proposed Bridge Lengths

- Lowery Mill Creek – proposed bridge length of 85'
- Belews Creek – proposed bridge length of 110'
- Belews Lake – proposed dual bridges with a length of 100'



Existing Culvert at Lowery Mill Creek



Existing Culvert at Belews Creek



Existing Culvert at Belews Creek



Bridge 164 over Belews Lake



CP 4A Avoidance & Minimization Utility Impacts

- Relocation of Overhead Utilities
- Possible relocation of Winston-Salem station pump north side of U.S.158 along R-2577A



CP 4 Avoidance & Minimization Utility Impacts



Relocation of
pipe bridge for
12" water main
over Belews
Lake located
south of Bridge
164

CP 4A Avoidance & Minimization

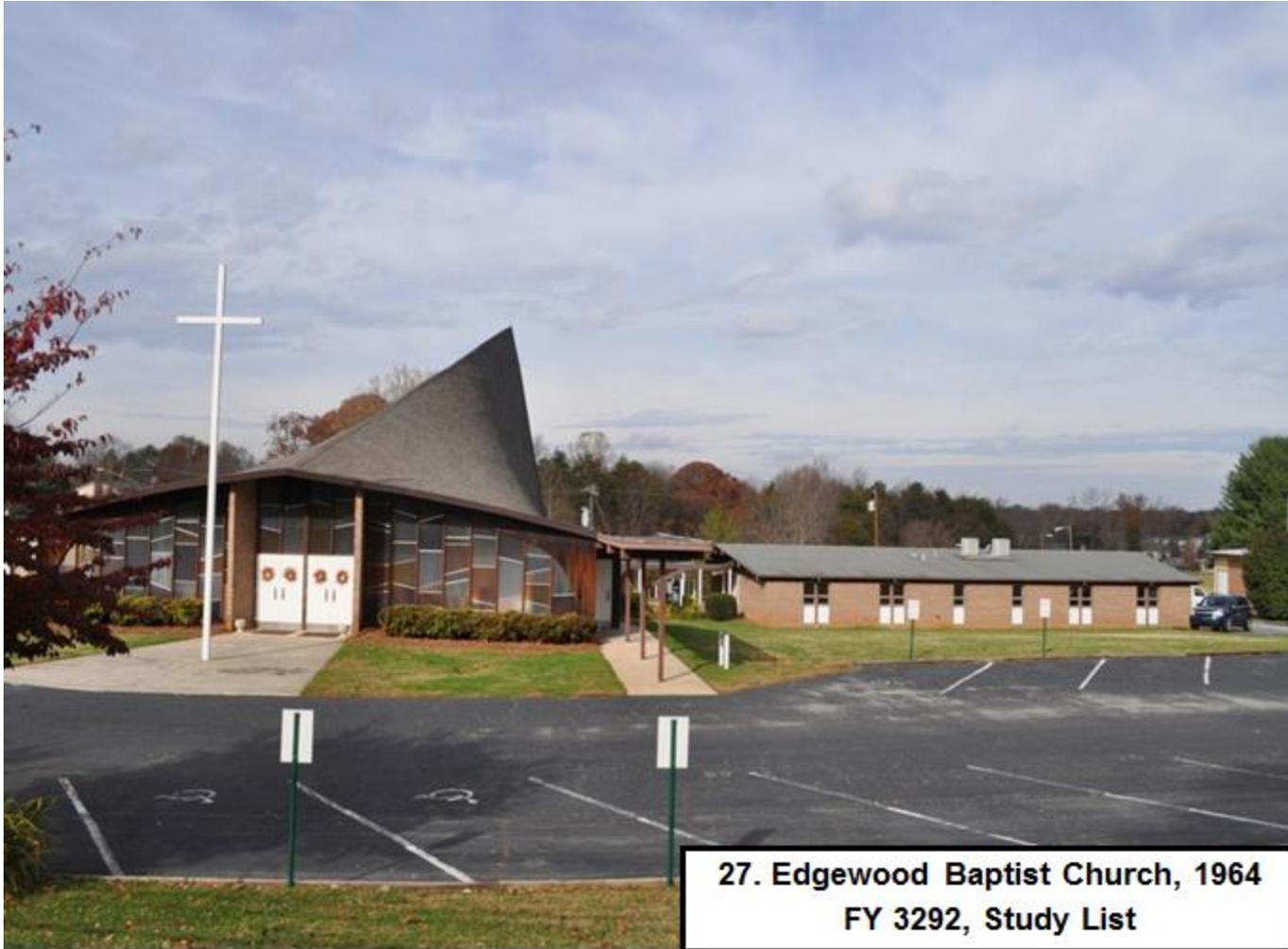
Additional Measures

- Tightened side slopes to 2:1 where possible:
 - R-2577 A&B – a reduction of 96 LF of overall stream impacts (from 3,026 LF to 2,930 LF)
 - R-2577 A&B segment 3 transitional widening – a reduction of 101 LF of stream impacts (from 636 LF to 535 LF)
 - R-2577C Alternative 2 – a reduction of 9 LF of stream impacts (from 3,334.5 LF to 3,325.5 LF)
 - R-2577C Alternative 3 – a reduction of 21 LF of stream impacts (from 2,842 LF to 2,821 LF)

CP 4A Avoidance & Minimization Additional Measures

1. Edgewood Baptist Church (eligible for National Register of Historic Places [NRHP]) – minimized impacts to church and residences across the street:
 - shifted alignment slightly to the south
 - reduced median width to 23'
 - tightened side slopes to 2:1
 - proposed retaining wall in front of church parking lot
2. Drive-In Movie Theater (eligible for NRHP) – tightened side slopes to reduce impacts

CP 4A Avoidance & Minimization Additional Measures

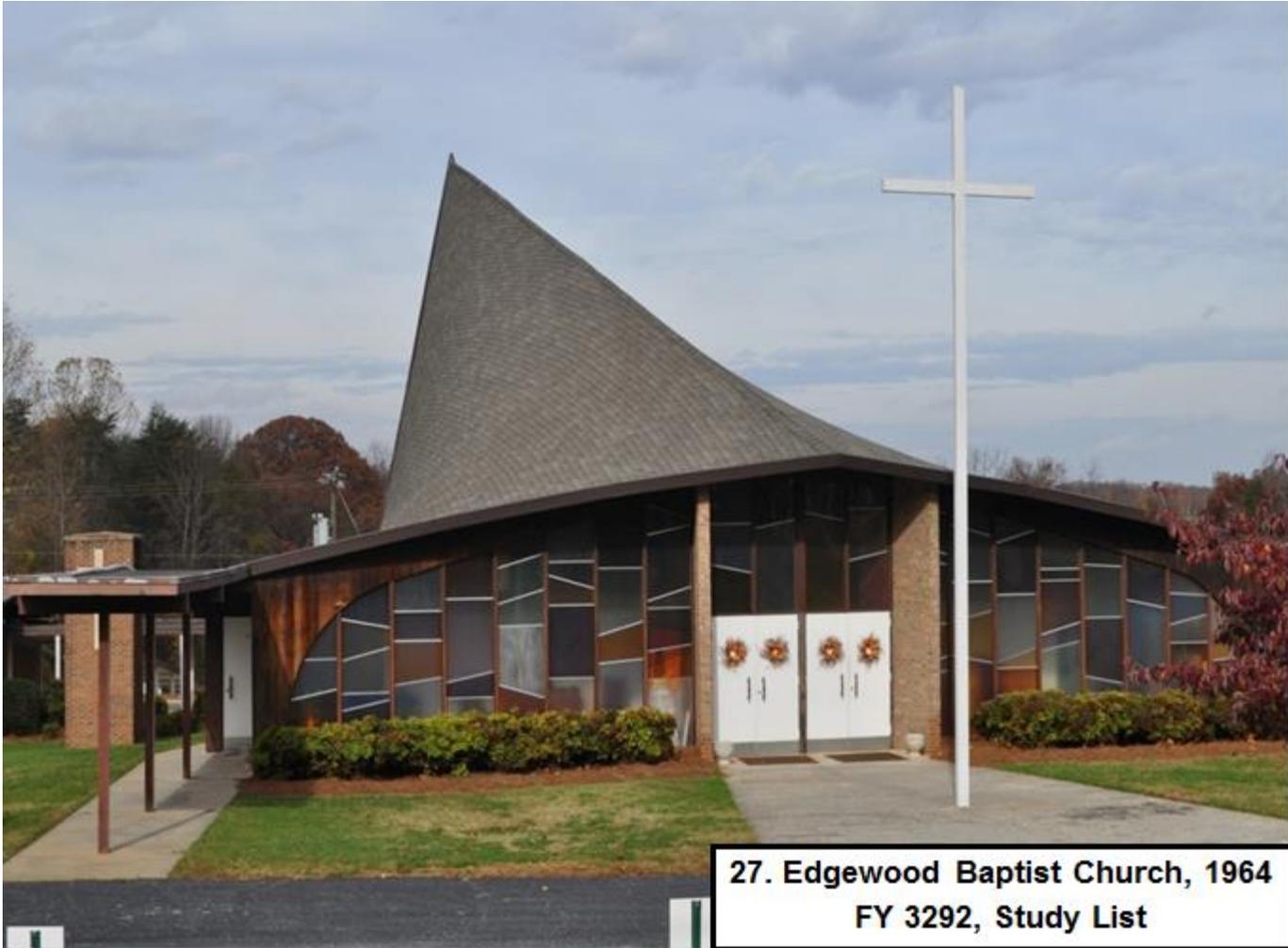


**27. Edgewood Baptist Church, 1964
FY 3292, Study List**

CP 4A Avoidance & Minimization Additional Measures



CP 4A Avoidance & Minimization Additional Measures



**27. Edgewood Baptist Church, 1964
FY 3292, Study List**

CP 4A Avoidance & Minimization Additional Measures



**165. Bel Air Drive-In Theater, c. 1956
FY 3269**

CP 4A Avoidance & Minimization Additional Measures



CP 4A Avoidance & Minimization Additional Measures



**165. Bel Air Drive-In Theater, c. 1956
FY 3269**

CP 4A Avoidance & Minimization Concurrence Form

TIP Project: R-2577

WBS No.: 37405

Avoidance and Minimization:

Based upon the current project development and design information, the jurisdictional impacts have been avoided and minimized to the maximum extent practicable. The following avoidance and minimization measures have been utilized:

1. Existing culverts at the following locations will be replaced with dual bridges:
 - Lowery Mill Creek – proposed bridge lengths of 85'
 - Belews Creek – proposed bridge lengths of 110'
2. Bridge 164 over Belews Lake will be replaced with dual bridges (100') and the vertical alignment has been adjusted at Belews Lake crossing (raised 4').
3. Sideslopes will be reduced from 6:1 to 2:1, where possible and without requiring the installation of guardrail, to further minimize stream and wetland impacts:
 - R-2577 A&B – an estimated reduction of 96 LF of overall stream impacts
 - R-2577 A&B segment 3 transitional widening – an estimated reduction of 101 LF of stream impacts
 - R-2577C Alternative 2 – an estimated reduction of 9 LF of stream impacts
 - R-2577C Alternative 3 – an estimated reduction of 21 LF of stream impacts

Additional minimization measures for non-jurisdictional resources have been incorporated into the preliminary design plans:

1. Edgewood Baptist Church (eligible for National Register of Historic Places [NRHP]) – minimized impacts to church and residences across the street:
 - shifted alignment slightly to the south
 - reduced median width to 23'
 - tightened side slopes to 2:1
 - proposed retaining wall in front of church parking lot
2. Drive-In Movie Theater (eligible for NRHP) – tightened side slopes to reduce impacts

Comments:

Discussion & Questions